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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,248	12/13/2006	Javier A. Jo	MICROS-49278	3061

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EXAMINER	
NGUYEN, HIEN NGOC	
ART UNIT	PAPER NUMBER
3768	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/567,248	JO ET AL.	
	Examiner	Art Unit	
	HIEN NGUYEN	3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) *7-15 and 25-44* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 16-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 February 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/18/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group 1, claims 1-6 and 16-24 in the reply filed on 05/21/2009 is acknowledged.

Drawings

The drawing of Fig. 10 is objected to because it is very blurry. Examiner can not read the numbers on Fig. 10. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required

corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 22 and 23 are objected to because claims 22 and 23 are system claims that depend on claim 21 which is a method claim. For the purpose of examination, examiner treats claims 22 and 23 as method claims.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

   A person shall be entitled to a patent unless –

   (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Marcu et. al. (US 6,272,376).

   Marcu discloses a method of characterizing a sample comprising:

   - estimating a fluorescence impulse response ("h(n)") of the sample, based upon an expansion including Laguerre coefficients ("$\{c_j\}$"), the expansion being represented by the equation h(n) and characterizing the sample by directly analyzing the Laguerre coefficients; (see col. 3, line 65-col. 4, line 67). Equation and coefficient have to be evaluated and analyzed to determine the characteristic of the sample.

- wherein the sample is selected from the group consisting of a biological tissue, a chemical, a biochemical sample and combinations thereof; (see col. 4, lines 1-3).
- predicting the concentration of at least one biochemical component of the sample, wherein the sample is composed of a plurality of biochemical components; (see abstract and col. 1, lines 1-28). Characterizing and discriminating a certain matter is predicting the concentration of biochemical component. Reveal qualitative and quantitative information about organic matter composition is predicting the concentration of biochemical component of the sample.
- a computer-readable medium having encoded thereon a computer-readable program code which when executed causes a computer to: estimate a fluorescence impulse response ("h(n)") of a sample, based upon an expansion including Laguerre coefficients ("$\{c_j\}$"), the expansion being represented by the equation h(n) and characterize the sample by directly analyzing the Laguerre coefficients; (see claims 12-13 and col. 7, lines 43-56).
- an instrument for characterizing a sample, comprising a computer-readable medium having encoded thereon a computer-readable program code which when executed causes the instrument to: estimate a fluorescence impulse response ("h(n)") of a sample, based upon an expansion including Laguerre coefficients ("$\{c_j\}$"), the expansion being

represented by the equation h(n) and characterize the sample by directly analyzing the Laguerre coefficients; (abstract and col. 5, lines 29-47).

- wherein the instrument is selected from the group consisting of a spectrophotometer and a drug discovery analysis system; (see col. 5, lines 29-47). The system to analyzing protein and lipid component in the tissue is use for drug discovery.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcu et al. (US 6,272,376) and in view of Maarek et al. (Time-resolved Fluorescence Spectra of Arterial Fluorescent Compounds: Reconstruction with the Laguerre Expansion Technique).

Regarding claim 16, Marcu does not explicitly disclose each step of Laguerre expansion coefficients. In the same field of endeavor, Maarek discloses:

- obtaining an impulse response for a sample having been exposed to an excitation pulse; deconvolving the excitation pulse from measured images; estimating a first expansion coefficient ("$\{c_0\}$") of a plurality of expansion

coefficients ("{c_j}") at each pixel of a plurality of pixels in an image and computing a map of the first expansion coefficient ("{c_0}"); generating a map of the higher expansion coefficients of the plurality of expansion coefficients ("{c_0}"); and computing a map of lifetimes by constructing an impulse response function ("IRF") at every pixel for a predetermined number of time instances and interpolating a time point at which the IRF becomes 1/e of its maximum value, wherein the IRF is represented by the equation: h(r, n); (see materials and methods section pages 179-180 and results section pages 180-181).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Marcu's method to include steps of obtaining an impulse response for a sample having been exposed to an excitation pulse; deconvolving the excitation pulse from measured images; estimating a first expansion coefficient ("{c_0}") of a plurality of expansion coefficients ("{c_j}") at each pixel of a plurality of pixels in an image and computing a map of the first expansion coefficient ("{c_0}"); generating a map of the higher expansion coefficients of the plurality of expansion coefficients ("{c_0}"); and computing a map of lifetimes by constructing an impulse response function ("IRF") at every pixel for a predetermined number of time instances and interpolating a time point at which the IRF becomes 1/e of its maximum value, wherein the IRF is represented by the equation: h(r, n) as taught by Maarek because these method steps improve the accuracy of characterizing and discriminating biological systems.

Regarding claims 17-23, Marcu discloses:

- wherein the sample is selected from the group consisting of a biological tissue, a chemical, a biochemical sample and combinations thereof; (see col. 4, lines 1-3).
- detecting a physiological condition from the group consisting of a tumor and an atherosclerotic plaque; (see col. 2, line 59-col. 3, line 21 and col.4, line 65-col.5, line 29).
- including predicting the distribution of concentration of at least one biochemical component of the sample images, wherein the sample is composed of a plurality of biochemical components; (see col. 1, lines 15-29 and col. 3, line 65-col. 4, line 27). Reveal both quantitative and qualitative component of protein and lipid in the sample give the distribution of concentration of each in the sample.
- including monitoring an intracellular component and an activity of the intracellular component; (see col. 11, line 55-col. 12, 67). The method monitors and analyzes intracellular component to classify the condition of the tissue.
- including identifying a chemical with a biological activity for automated screening of the sample for new drugs discovery; (see col. 7, lines 11-42). The method is automated by the system to perform an analysis of tissues and other organic system. This analysis identifies chemical with a biological activity.

- further configured to characterize drugs based on their chemical composition so high speed/throughput surveying and counting of the drugs is possible; it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method to characterize drugs based on their chemical composition because the method determines the qualitative and quantitative information of the organic composition (see col. 1, lines 15-60). The method characterize organic sample. This method would be efficient and accurate in characterizing drugs.
- configured to characterize a biochemical essay based on biochemical contents to facilitate high speed/throughput surveying/analysis of the essay; it would have been obvious to one of ordinary skill in the art at the time of the invention to use the method to characterize biochemical essay based on their biochemical content because the method determines the qualitative and quantitative information of the organic composition (see col. 1, lines 15-60). The method characterize organic sample. This method would be efficient and accurate in characterizing biochemical essay. A tissue sample is a biochemical essay.

5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marcu et al. (US 6,272,376), in view of Maarek et al. (Time-resolved Fluorescence Spectra of Arterial Fluorescent Compounds: Reconstruction with the Laguerre Expansion Technique) and further in view of Reel (US 2003/0136921).

Marcu and Jo do not disclose sequencing DNA microarray. Reel discloses automated sequencing DNA microarray to determine composition of the sample (see [0002]). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Marcu's method to include sequencing DNA microarray as taught by Reel because DNA sequencing allow the method to determine the composition of the DNA sample such as structure and function of protein and lipid in the DNA sample.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIEN NGUYEN whose telephone number is (571)270-7031. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. N./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768